

1. (Twice amended) A method of etching substrates in a chamber having internal surfaces, comprising:

(a) introducing at least a first etchant into the chamber wherein the first etchant is selected to minimize deposition of a material on the internal surfaces;

C1 (b) striking a plasma in the chamber to cause disassociation of the first etchant wherein the disassociated first etchant recombines with the material on the internal surfaces; and

(c) etching one or more layers from a substrate comprising silicon.

C2 4. (Amended) The method of claim 1, wherein the first etchant comprises chlorine, hydrogen chloride, and combinations thereof.

6. (Twice amended) A method of etching a substrate in a chamber having internal surfaces, comprising:

C3 (a) flowing at least a first etchant and a second etchant into the chamber, wherein a volumetric flow of the first etchant is greater than a volumetric flow of the second etchant; and

(b) striking a plasma in the chamber to cause disassociation of the first etchant and the second etchant, wherein the disassociated first etchant deposits material on the internal surfaces at a first rate and the disassociated second etchant deposits material on the internal surfaces at a second rate less than the first rate; and

(c) etching one or more layers from the substrate, wherein the one or more layers comprise silicon.

7. (Amended) The method of claim 6, wherein the first etchant comprises chlorine, hydrogen chloride, and combinations thereof.

8. (Amended) The method of claim 6, wherein the second etchant comprises bromine, hydrogen bromide, and combinations thereof.

C4 12. (Twice amended) A method of etching a substrate in a chamber having internal surfaces, comprising:

(a) flowing at least a first etchant and a second etchant into the chamber, wherein a volumetric flow of the first etchant is greater than a volumetric flow of the second etchant;

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cont (b) striking a plasma in the chamber to cause disassociation of the first etchant and the second etchant and etching of the substrate, wherein the disassociated first etchant deposits material on the internal surfaces at a first rate and the disassociated second etchant deposits material on the internal surfaces at a second rate less than the first rate; and

(c) flowing oxygen into the chamber.

25 21. (Amended) A method of etching a substrate, comprising:

- (a) inserting a substrate into a chamber;
- (b) flowing into the chamber a chemical mixture comprising a bromine-containing fluid and at least one of fluorine-containing fluid and chlorine-containing fluid;
- (c) striking a plasma; and
- (d) etching the substrate.

22. (Amended) The method of claim 21, wherein the fluorine-containing fluid comprises at least one of SF_6 and NF_3 each provided at a volumetric flow that is less than about 20% of the volumetric flow of the chemical mixture.

23. (Amended) The method of claim 21, wherein fluorine-containing fluid comprises CF_4 and O_2 that are provided at a volumetric flow ratio of $\text{CF}_4:\text{O}_2$ of about 4:1 and at a volumetric flow that is less than about 50% of the volumetric flow of the chemical mixture.

26 33. (Amended) The method of claim 19, wherein the one or more plasma constituents comprises chlorine, hydrogen chloride, and combinations thereof.

34. (Amended) The method of claim 19, wherein the one or more plasma constituents comprises bromine, hydrogen bromide, and combinations thereof.